

What Is Claimed Is:

1. A color image pickup element, comprising:
2 groups of image pickup elements provided for
3 a plurality of colors, each image pickup element
4 group including a plurality of image pickup
5 elements linearly arranged in rows on a substrate,
6 wherein a row of image pickup elements in the
7 image pickup element group and another row of image
8 pickup elements in the same image pickup element
9 group are arranged such that respective image
10 pickup elements match in position in a direction in
11 which the image pickup elements are arranged.

1. The color image pickup element according to
2 claim 1, wherein the groups of image pickup
3 elements are provided so as to correspond to a red
4 color, a green color, and a blue color.

1. An image reader, comprising:
2 a color image pickup element including groups
3 of image pickup elements provided for a plurality
4 of colors, each image pickup element group
5 including a plurality of image pickup elements
6 linearly arranged in rows on a substrate, wherein
7 a row of image pickup elements in the image pickup
8 element group and another row of image pickup
9 elements in the same image pickup element group are
10 arranged such that respective image pickup elements

11. match in position in a direction in which the image
12. pickup elements are arranged;

13. a light source illuminating an original;

14. a plurality of mirrors reflecting light which
15. has originated from the light source and has been
16. reflected from or passed through the surface of the
17. original;

18. a light-gathering lens gathering the light
19. reflected from the mirrors onto the color image
20. pickup element;

21. an analog-to-digital conversion section
22. subjecting to analog-to-digital conversion pixel
23. data output from the color image pickup element;

24. a pixel data storage device storing pixel data
25. which have been subjected to analog-to-digital
26. conversion by the analog-to-digital conversion
27. section; and

28. an averaging device subjecting to averaging
29. operation a plurality of pixel data sets which are
30. stored in the pixel data storage device, have been
31. read at different times from the same position with
32. reference to a direction in which image pickup
33. elements of the respective image pickup element
34. rows are arranged, and outputs a result of
35. averaging operation as one set of pixel data.

1. 4. An image reader, comprising:

2 a color image pickup element including groups
3 of image pickup elements provided for a plurality
4 of colors, each image pickup element group
5 including a plurality of image pickup elements
6 linearly arranged in rows on a substrate, wherein
7 a row of image pickup elements in the image pickup
8 element group and another row of image pickup
9 elements in the same image pickup element group are
10 arranged such that respective image pickup elements
11 match in position in a direction in which the image
12 pickup elements are arranged;

13 a light source illuminating an original;

14 a plurality of mirrors reflecting light which
15 has originated from the light source and has been
16 reflected from or passed through the surface of the
17 original;

18 a light-gathering lens gathering the light
19 reflected from the mirrors onto the color image
20 pickup element;

21 an analog-to-digital conversion section
22 subjecting to analog-to-digital conversion pixel
23 data output from the color image pickup element;

24 a pixel data storage device storing pixel data
25 which have been subjected to analog-to-digital
26 conversion by the analog-to-digital conversion
27 section; and

28 an addition device subjecting to adding
29 operation a plurality of pixel data sets which are

30. stored in the pixel data storage device, have been
31. read at different times from the same position with
32. reference to a direction in which image pickup
33. elements of the respective image pickup element
34. rows are arranged, and outputs a result of adding
35. operation as one set of pixel data.

1. 5. An image reading method for use with an image
2. reader including a color image pickup element
3. including groups of image pickup elements provided
4. for a plurality of colors, each image pickup
5. element group including a plurality of image pickup
6. elements linearly arranged in rows on a substrate,
7. wherein a row of image pickup elements in the image
8. pickup element group and another row of image
9. pickup elements in the same image pickup element
10. group are arranged such that respective image
11. pickup elements match in position in a direction in
12. which the image pickup elements are arranged; a
13. light source illuminating an original; a plurality
14. of mirrors reflecting light which has originated
15. from the light source and has been reflected from
16. or passed through the surface of the original; and
17. a light-gathering lens gathering the light
18. reflected from the mirrors onto the color image
19. pickup element, the method comprising:

20. an analog-to-digital conversion step for
21. subjecting to analog-to-digital conversion pixel
22. data output from the color image pickup element;

23. a pixel data storage step for storing pixel
24. data which have been subjected to analog-to-digital
25. conversion by the analog-to-digital conversion
26. section; and

27. an averaging step for subjecting to averaging
28. operation a plurality of pixel data sets which are
29. stored in the pixel data storage device, have been
30. read at different times from the same position with
31. reference to a direction in which image pickup
32. elements of the respective image pickup element
33. rows are arranged, and outputs a result of
34. averaging operation as one set of pixel data.

1. 6. An image reading method for use with an image
2. reader including a color image pickup element
3. including groups of image pickup elements provided
4. for a plurality of colors, each of image pickup
5. element group including a plurality of image pickup
6. elements linearly arranged in rows on a substrate,
7. wherein a row of image pickup elements in the image
8. pickup element group and another row of image
9. pickup elements in the same image pickup element
10. group are arranged such that respective image
11. pickup elements match in position in a direction in
12. which the image pickup elements are arranged; a

13. light source illuminating an original; a plurality
14. of mirrors reflecting light which has originated
15. from the light source and has been reflected from
16. or passed through the surface of the original; and
17. a light-gathering lens gathering the light
18. reflected from the mirrors onto the color image
19. pickup element, the method comprising:

20. an analog-to-digital conversion step for
21. subjecting to analog-to-digital conversion pixel
22. data output from the color image pickup element;

23. a pixel data storage step for storing pixel
24. data which have been subjected to analog-to-digital
25. conversion by the analog-to-digital conversion
26. section; and

27. an addition step for subjecting to adding
28. operation a plurality of pixel data sets which are
29. stored in the pixel data storage device, have been
30. read at different times from the same position with
31. reference to a direction in which image pickup
32. elements of the respective image pickup element
33. rows are arranged, and outputs a result of adding
34. operation as one set of pixel data.